

**USER MANUAL
SFM(DVB-RDS)
Option:
DVB audio receiver/RDS encoder
Version 2.2**



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1. General

Proflin

Thank you for selecting this fine piece of equipment. This user manual will help you in installing and operating this product on your network.

The philosophy of Proflin is to develop and to produce equipment that is in conformity with the international standards, and is in no-way proprietary. In the last decade we have developed and produced digital- and analogue audio transmission products for a wide range of customers on the world market.

Our specialisation on Cable-radio and Broadcast-equipment has provided a technical relationship with Barconet and we have come to a mutual agreement to make the Proflin equipment also suitable for the ROSA system of Barconet. ROSA stands for Remote control Open System Architecture.

Proflin FM Modulators

The PROFLINE SFM is a "state of the art" FM stereo broadcast modulator with an extremely accurate reproduction capability. The application of the SFM is especially for stereo transmission of satellite- or local radio/audio programs, analogue or digital originated, which can be presented on Cable Networks.

DVB audio satellite receiver for SFM

Based on the popular range of the SFM FM modulators, the addition of this DVB board responds to the demands from the professional broadcast market. It is build around a wide range RF tuner with incorporated bandwidth filtering to cover the range from 2 to 45 Mbaud signals. A tuner by-pass is possible by using the ASI interface. The decoded audio is internally connected to the SFM FM modulator. As an option the SFM-DVB can also be equipped with a RDS encoder.

Setting the receiver can be easily performed at the SFM front side where receiving frequency, baudrate and selection is done. For proper signalling an extensive alarm menu is build in, from which user can select different levels and thresholds for alarming conditions, which are brought out to the signalling LED's at the front site and both contacts.

Features

- Agile, high output, FM-Modulator
- Broadcast stereo coder
- Advanced menu control with key pad & LCD
- FM subcarrier input for data or special audio
- Remote Control and Diagnostic Open System Architecture (ROSA)

Options

- Compressed audio, subcarrier demodulator: ASD
- Digital, ISO/MPEG1 layer II, subcarrier demodulator: DSD
- Digital Audio Broadcasting receiver/decoder: DAB
- ITU-T J.57, ISO/MPEG Layer II, APTX decoder: DS2
- Digital Video Broadcasting audio demux: DVB
- Radio Data System dynamic encoder: RDS

2. Installation

Before connecting the SFM to the mains, please check the unit for any traces of damage on mechanical or electrical parts.

The SFM is a 19" 1U rack mounting unit with connector access at the rear side. The unit can be mounted at the front of a 19" rack using the appropriate mounting set. However, the use of lateral support is strongly recommended.

Please check the following chapters when connecting the SFM in the application so maximum performance is guaranteed.

Special care should be taken with respect to the safety regulations (earthing) as well as the proper mounting of the (RF) connectors.

Attention!

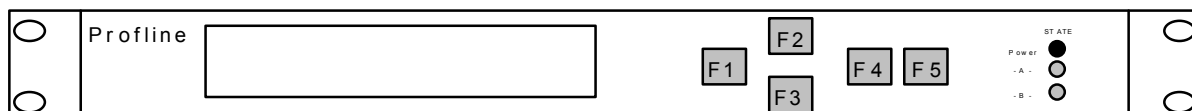
Do not attempt to open the SFM as there are no user-servible parts inside and warranty is void! For upgrading please contact Proflin or your local distributor. For addresses we like to refer to chapter 8. "Support".

3. Operation

The SFM was designed for professional use in head-end environment and has a user friendly operating menu available through the keypad and display on the front side. The rearpanel has also self-explaining connections and will be explained in chapter 5. "Connections".

3.1. Keypad

The buttons on the front, are function keys (← -menu). With the function keys all adjustments can be performed at the fronted of the SFM.



F1	←	= STOP INPUT / MENU BACK-STEP
F2	↑	= STEP RIGHT / INCREASE VALUE
F3	↓	= STEP LEFT / DECREASE VALUE
F4	↵	= CONFIRM (ENTER)
F5	menu	= OPEN MENU / CLOSE MENU

To change settings and/or values, please perform the following steps.

- Push on [menu] to select the menu function
- Select the submenu (visible by flashing name) by pushing function keys ↑ and ↓.
- Confirm the selection by pushing ↵
- Select the menu (visible by flashing name) by pushing ↑ and ↓
- Confirm the selection by pushing ↵
- Put the SFM in the Editing mode by pushing ↵ the setting starts flashing
- Now change the setting according to the manual by using ↑ and ↓, confirm the new setting by pushing ↵.
- To leave the menu without storing the new value, please push on ←
- When settings are performed push on ← to leave the submenu or push [menu] to return to the operating mode.
- The new settings will now become active

In short:

- Step 1 Call menu ([menu])
- Step 2 Select (↑ and ↓)
- Step 3 Confirm (↵)
- Step 4 Close all menus [menu] or close sub menu (←)

Step 2 and 3, depending of the value to be changed, are to be repeated several times.

Attention!

For quickly in- or decreasing the settings, ↑ or ↓ should be hold for more than 3 seconds. After this period, value steps rapidly changes until the F-key is released.

3.2. Display

When connecting the SFM to the mains, the unit will start up and after ± 4 seconds the main status will appear on the display.

SFM(DVB/RDS)	Name	[■ ■]	Stereo
IN: AUX	xxxxxxx	OUT:	96.00 MHz

SFM(DVB/RDS) : Stereo Frequency Modulator with installed options (e.g. DVB audio receiver, RDS-option, etc..)

Name : Broadcasted RDS-name, when no RDS installed this shows the preset name

[■ ■] : VU indication

Stereo : Broadcast mode (stereo or mono)

IN: AUX : Input from AUX, when DVB is selected as input, the input parameters of the DVB will be shown:
Normally the received program name is showed here (max. 8 characters).

Error messages

Signal? No DVB signal is received.

BER? Bit error rate of the signal received is to high to decode audio programs.

PROG? New list available. Select a new program first.

N/A No valid list with audio services available.

Conditional acces

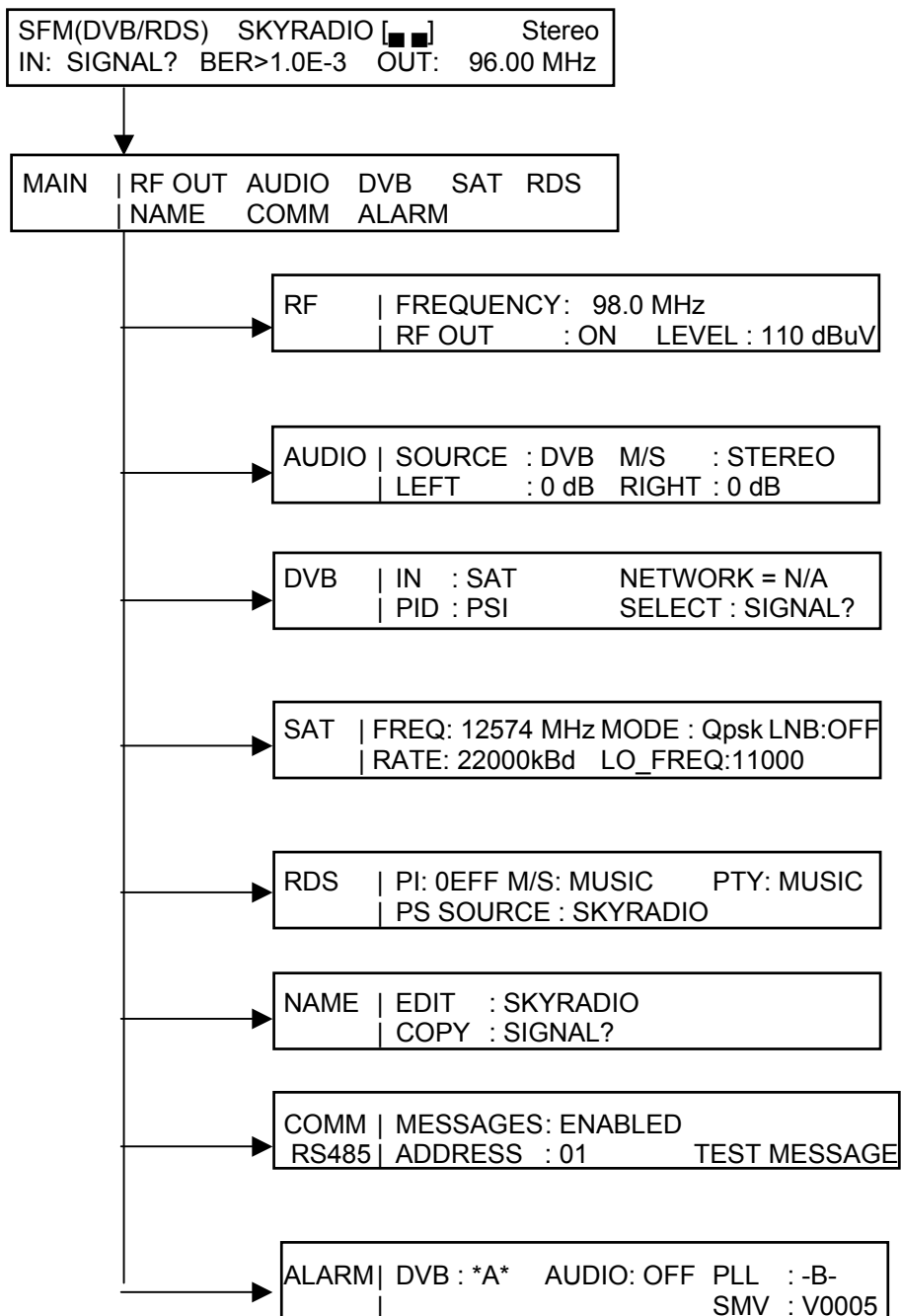
When behind the name the characters =CA are prompted, the selected program is for conditional access only, and therefor not decoded with this DVB audio receiver.

xxxxxxx : When DVB is selected as input, here parameters are shown.
When satellite reception is used, the BER is showed here (Bit Error Rate). This gives an indication of the quality of reception. BER figures lower then 1.0 E-6 are good. BER figures higher then 1.0 E-4 under normal environmental circumstances are to bad for proper operation.
When ASI transport stream decoding is used, the transport rate is showed here.

OUT : The frequency of the FM modulator is shown here.

3.3. Menustructure

Following diagram reflects the menu structure of the SFM



4. Settings

After pushing [menu] one time, the main menu will appear. The main menu will show all available submenus:

MAIN		RF-OUT	AUDIO	DVB	SAT
		RDS	NAME	COMM	ALARM

4.1. RF-OUT

When selecting the submenu "RF-OUT", the following settings are available:

RF		FREQUENCY:	98.0 MHz
		RF OUT	: OFF LEVEL : 110 dBuV

Frequency	:	87.50 - 108.00 MHz	10KHz steps
RF out	:	On/Off	
RF Level	:	100.0 - 120.0 dB μ V	in 0.5dB steps

4.2. AUDIO

When selecting the submenu "AUDIO", the following settings can be adjusted:

AUDIO		SOURCE	: DVB	M/S	: STEREO
		LEFT	: 0 dB	RIGHT	: 0 dB

Source	:	Mute/Aux or when installed AUX/DVB/ASD...
M/S	:	Mono/Stereo broadcast-mode
Left	:	-9 - +6 dB (Audio level)
Right	:	-9 - +6 dB (Audio level)

4.3 DVB (Option)

When selecting the submenu "DVB", the following settings can be adjusted:

DVB	IN : SAT	NETWORK = N/A
	PID : PSI	SELECT : SIGNAL?

- IN : SAT/ASI selects Satellite or ASI input
- Network = : shows the name of the received network
- PID : PSI = Programm Service Information
The SFM-DVB is now able to select a radioprogramm from the DVB bouquet.
- 32 = The SFM-DVB is now able to receive radio programmes which are not assigned as a radio program to the standard DVB bouquet. These radioprogrammes can only be selected by a socalled PID number between 32 and 8190. Please ask your operator for the PID number and use the ↑ or ↓ key to select the PID number. To increase the steppingspeed keep the ↑ and ↓ key pressed.
By pressing ↓ the PID under 32 will switch to PSI.
By pressing ↵ the selected PID number is stored.
- Select : Displays the selected program. Other programs will be shown by pressing the ↑ and ↓ buttons.
By pressing ↵ the selected program is stored.
- NOTE !
To information in this field is not automatically updated in this mode. To retrieve the updated information, the ↵ key has to be pressed.

Error messages

- Signal? No DVB signal is received.
- BER? Bit error rate of the signal received is to high to decode audio programs.
- PROG? New list available. Select a new program first.
- N/A No valid list with audioservices available.

Conditional acces

When behind the name the characters =CA are prompted, the selected program is for conditional access only, and therefor not decoded with this DVB audio receiver.

4.4. SAT

When selecting the submenu "SAT", the following subjects can be adjusted:

SAT	FREQ: 12574 MHz	MODE : Qpsk	LNB:OFF
	RATE: 22000kBd	LO_FREQ:11000	

FREQ	:	Receiver frequency (i.e.: 12574 Mhz).
MODE	:	Transmission mode: Qpsk or Bpsk.
LNB	:	On / Off, supplying the LNB with 15 V.
RATE	:	Baudrate .
LO_FREQ	:	LNB oscillatorfrequency of the LNB outdoor unit

4.5. RDS (option)

When selecting the submenu "RDS", the following subjects can be adjusted:

RDS	PI: 0EFF	M/S: MUSIC	PTY: MUSIC
	PS SOURCE : SKYRADIO		

- PI	:	0000 - FFFF	Hex. numbers
- M/S	:	Music/Speech	
- PTY	:	NONE	NEWS
	:	INFO	SPORT
	:	DRAMA	CULTURE
	:	VARIED	POP M
	:	M.O.R. M	LIGHT M
	:	OTHER	CLASSICS
- PS SOURCE	:	SFM Name / DVB Name, selects the origin of the program name in the RDS signal. When SFM Name is selected the local name is used.	
	:	When DVB Name is selected the name derived out of the list of programs will be used.	
	:	Because of the limitation of 8 characters within the RDS format manual editing of the name is useful. This can be performed in the NAME menu.	

4.6. NAME

When selecting the submenu "NAME", the name of the program can be installed:

NAME	EDIT : SKYRADIO
	COPY : SIGNAL?

- EDIT	:	8 characters maximum
	:	Available characters (ASCII 32 - ASCII 125)
- COPY	:	the program name derived out of the DVB list is showed here.
	:	By pressing the ↵ key (confirm) the copy action results that the Name field contains now this program name.

4.6.1 Copying the DVB name

When equipped with a DVB board the station name will be derived from the DVB stream and displayed on the SFM front after the "COPY" sign.

To use this name as the desired station name, please follow the procedure as described;

- Use the ↑ and ↓ key's to select the COPY mode (starts blinking)

NAME		EDIT	:	SKYRADI
		COPY	:	SKYRADI

- Push the ↵ key to copy the name to the "Edit" field.
- To edit the name please go to chapter 4.6.2. "Editing the name"

4.6.2 Editing the name

To edit the station name please, perform the following steps;

NAME		EDIT	:	SKYRADIO
		COPY	:	SIGNAL?

- Push the \downarrow key to enter the "edit" mode

NAME		EDIT	:	S KYRADIO
		COPY	:	SIGNAL?

- The first character will become an underscore
- Push the \downarrow key again to start editing the first character which starts blinking

NAME		EDIT	:	S KYRADIO
		COPY	:	SIGNAL?

- Now use the \uparrow and \downarrow key's to select the desired character

				P
				Q
				R
NAME		EDIT	:	SKYRADIO
				T
				U

- Push the \downarrow key to select the desired character after which the following character will start blinking.

NAME		EDIT	:	S KYRADIO
		COPY	:	SIGNAL?

- Now repeat the same steps as before untill all characters have been edited and "EDIT" wil start blinking again.

NAME		EDIT	:	SKYRADIO
		COPY	:	SIGNAL?

- Push [menu] to return to the operating mode.

4.7. COMM

The submenu "COMM" is used for communication through the RCDS-bus at the back. RCDS is the abbreviation for Remote Control and Diagnostics System and is used for complete remote controlling of the SFM by the ROSA system from Barco.

When selecting the submenu "COMM" the following subjects can be adjusted:

COMM	MESSAGES: ENABLED	BAUD = 19k2
RS485	ADDRESS : 01	TEST MESSAGE

- MESSAGES : Disabled/Enabled
- BAUD = : 19k2
- ADDRESS : 00 - 3F (Hex)
- TEST MESSAGE : When activating this function, the SFM is announced to the RCDS-system

Please contact Proflin to obtain further information regarding the optional available Rosa system drivers version 2.xx and 3.xx

4.8. ALARM

When selecting the Alarm submenu the following alarm-outputs/messages can be installed:

ALARM	DVB : *A*	AUDIO: OFF	PLL : -B-
			SMV : V0005

- DVB : OFF/ -A- / -B-
- AUDIO : OFF/ -A- / -B-
- PLL : OFF/ -A- / -B-
- SFMV V005 : shows the firmware release number

The alarm will become active when:

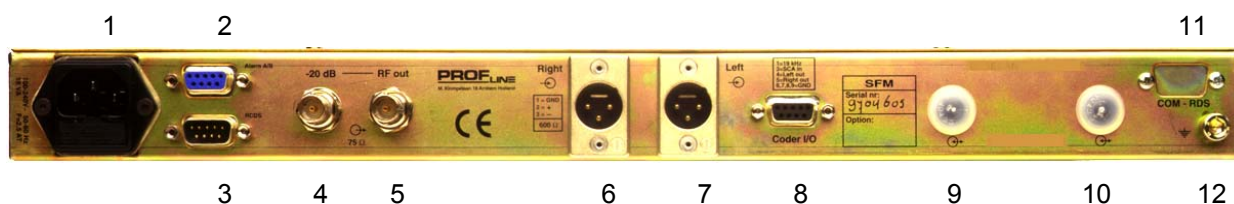
- DVB : When the DVB receiver has no signal or cannot decode an audio program properly.
- AUDIO : When for a period of 5 minutes no audio is detected
- PLL : When the PLL is out of lock

When an alarm has been detected and the submenu "ALARM" is selected, there is an indication with "** *" which indicates that this alarm is active (example *A* = alarm A is active).

Alarm connector: Sub D9 Female;

Connections: -A alarm : 7= Common 8=NO 9=NC
 -B alarm: : 3= Common 4=NO 5=NC

5. Connections



From left to right:

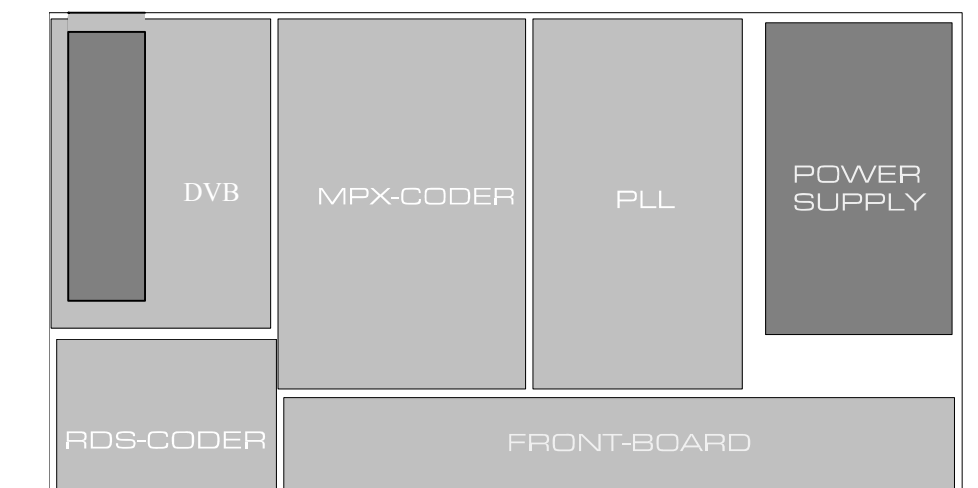
- | | |
|---------------------------|---|
| 1. Mains connection | : IEC panel mount plug with fuse |
| 2. Alarm A/B | : Sub D9 female |
| 3. RCDS | : Sub D9 male |
| 4. RF-test output - 20 dB | : BNC 75Ω |
| 5. RF output | : BNC 75Ω |
| 6. Audio input right | : XLR male |
| 7. Audio input left | : XLR male |
| 8. Coder I/O | : Sub D9 female |
| 9. ASI | : BNC 75Ω 270Mbit/s (Max. transport stream rate = 100 Mbit/s) |
| 10. SAT | : BNC 75Ω (950 - 2150 MHz, 25 - 65 dBμV) |
| 11. COM-RDS | : Sub D9 female data-interface with RS 232. |
| 12. Ground chassis | : M 6 |

6. Blockdiagram SFM-DVB/RDS

It is allways possible to extend an excisting SFM with the DVB and/or RDS option. Altough this can be performed by the user, we recommend to let this perform by skilled personel (f.e. the local Profline distributor).

Please contact Profline for further information.

Innerview of the SFM with optional DVB receiver and RDS encoder



7. Specifications SFM

Stereo MPX encoder

Audio input	: XLR male, 1=GND 2=+ signal 3=- signal, 600 Ohm balanced
Audio output	: L&R, 20 Ohm unbalanced (Sub-D9 female)
Audio frequency	: 30 Hz-15 kHz, $\pm 0,5$ dB: ref=500 Hz & 100%mod.
Input for maximum modulation L/R	: 6 dBm = 100%
Audio level adjustments L&R	: 15 dB in steps of -9/-6/-3/-1/0/1/3/6 dB, ± 0.2 dB
L/R separation	: > 50 dB for 30Hz-12kHz, 46 dB for 12 kHz-15kHz
Phase	: < 5°, 40 Hz -15 Hz
Pre-emphase	: 0-50-75 μ sec (CCIR Rec.450-1) internal set with jumpers
Default	: 50 μ sec (CCIR Rec.450-1)
38 kHz suppression	: > 40 dB (CCIR Rec. 450-1)
Distorsion	: > 50 dB (0.3%), 1 kHz / 0 dBm
S/R	: > 74 dB(CCIR Rec.468-4 unweighted)
Hum modulation	: > 80 dB
Pilot deviation	: 7.5 kHz
Pilot stability	: < 1 Hz (CCIR Rec.643 Annex 1, Rec. 450-1)
Pilot 19 kHz output	: 250 mV, 600 Ohm (SuB-D9 female)
SCA subcarrier input	: -6 dBm (=10% deviation), 600 _ (Sub-D9 female)
Connections encoder Sub D9	: 3=in/SCA, 1=out/19 Hz, 4&5=out/L&R, 6 to 9=GND
Optional	: MPX output

RF modulator

Frequency output	: Fully adjustable from 87.5 to 108 MHz, 10 kHz-steps
RF carrier stability	: < 1 kHz, 0-50° C
RF output level	: 100 to 120 dB μ V, adjustable in 0.5 dB-steps
Spurious suppression	: > 60 dB
RF outputs, main and -20 dB	: BNC, 75Ohm
Return loss	: > 20 dB
Maximum deviation	: 75 kHz, composed of:
Pilot 19 kHz	: 7.50 kHz
Audio L/R	: 60 kHz
RDS deviation	: 2 kHz (optional)
SCA deviation	: 5.5 kHz (external)

Data and Alarm ports

ROSA communication port	: RS 485 / Sub D9 connector male
Data input RDS (option)	: RS 232 / Sub D9 connector male
Alarm connection (relay contacts)	: Sub D 9 connector female A-Alarm: 7=common 8=NO 9=NC B-Alarm: 3=common 4=NO 5=NC
Alarm set up, menu-controlled	: Alarm choice A/B for: PLL, Input, Option and Temperature

General

Main power	: 100 to 240 VAC, 50 to 60 Hz, maximum 20 Watt
Power connection	: IEC panel-mount plug filter with fuse 2.5 AT
Safety and EMC	: In accordance to CE regulations
Operation ambient temperature	: 5 to 45 °C (storage -5 to 65 °C)
Housing dimensions, weight	: 19 inch x 1u x 300 mm (depth), 5 kg

7.1. Specifications DVB

Technical specifications DVB (SFM-version)

RF- input

Complies to	: ETS 300421 (DVB-S)
Frequency input	: 950 MHz to 2150 MHz
RF input level	: -65 dBm to -25 dBm
VSWR	: > 10 dB
Symbol rate	: 2 to 45 Mbaud
Input connector	: BNC 75 Ohm
Input impedance	: 75 Ohm
LNB voltage supply	: 14V selectable on/off

ASI input

Complies to	: EN 50083-9 (DVB-PI)
Data transmission speed	: 270 Mbit/s
Coding scheme	: 8B/10B
Max. MPEG2 information rate	: 100 Mbit/s
Input connector	: BNC 75 Ohm
Input impedance	: 75 Ohm

Audio specifications

Digital level reference	: -6 dBFS (100%)
Frequency 30 Hz to 20 KHz	: < 0.5 dB
SINAD @ 6 dBm	: -72 dB
THD (IEC)	: -85 dB

Alarm contacts

Number of relays	: 2
Contacts	: change over (N.O. - N.C.)

Diagnostic port

Protocol	: RS485 / RS422, N-8-1, 19k2 baud
Modes	: Diagnostic and firmware downloads.



8. Support

For support, please contact your local Proflin distributor or contact our service department.



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